PUBLIC SUMMARY

Comprehensive Monitoring Program
SANTA MONICA BAY

JANUARY 2007

IN BRIEF

What is the* Comprehensive Monitoring Program *for Santa Monica Bay?

The *Comprehensive Monitoring Program* for Santa Monica Bay (referred throughout this summary as the "Program") is a catalog of detailed monitoring designs for five major habitat types within the Bay. These designs focus on specific scientific and management questions. In addition, sampling design, intended data products, and the selection of environmental indicators are explicitly linked.

This report on the Program includes an **implementation plan** that includes a detailed schedule, cost estimates for individual Program elements, and recommendations on the Program's management structure, including data management and assessment strategies.

The Program culminates efforts that began in the mid-1990s with the identification of key management questions and monitoring priorities.

What is the goal?

The goal of the Program is to provide a regional, long-term picture of the status of the various ecosystems in Santa Monica Bay.

***Why do we need* a Comprehensive Monitoring Program?**

Monitoring is the basic means by which we can assess the environmental state of Santa Monica Bay and how it is changing over time. Traditionally, monitoring has been the primary mechanism by which regulatory agencies, resource managers, and permitted dischargers have evaluated the condition of the Bay and the effectiveness of regulatory programs. Past monitoring focused on major discharges left many acknowledged data gaps. A lack of coordinated, Bay-wide information has hindered efforts to restore and protect Bay's habitats and resources.

This Program combines existing monitoring efforts with new monitoring efforts, and will produce a more complete picture of the status of important habitats in the Bay.

The following is a public summary of the Final Report on the Comprehensive Monitoring Program for Santa Monica Bay, prepared for the Santa Monica Bay Restoration Commission.

ABOUT THE COMPREHENSIVE MONITORING PROGRAM

The *Comprehensive Monitoring Program* lays out new monitoring designs for five major habitat types within the Bay. Each includes a core motivating question, a number of related objectives, specific monitoring approaches, indicators, and data products, and sampling designs detailing number and locations of stations, sampling frequency, and measurements to be collected.

The Program incorporates key monitoring efforts that extend from the outer Bay to the high tide line along the shore. This is the scope of the Program. However, the Program is intended to complement other efforts, such as TMDLs, that link land and marine environments.

Five major habitat (or ecosystem) types are covered in the Comprehensive Monitoring Program:

- Pelagic Ecosystem
- Soft Bottom Ecosystem
- Hard Bottom Ecosystem
- Rocky and Sandy Intertidal
- Wetlands

Generally, the Program focuses on ecosystem resources rather than on anthropogenic inputs and impacts. The Program seeks to put together a picture of the overall conditions in the Bay.

The Program defines monitoring broadly: "monitoring" includes the acquisition and integration of data from a wide range of sources. The Program relies on data from both existing sources and proposes new monitoring efforts to fill key data gaps. An important aspect of the Program is its focus on taking maximum advantage of existing data gathering and analysis efforts being conducted by other parties.

The components that make up the Comprehensive Monitoring Program fall generally into three main categories of activities:

- Existing long-term programs with an independent funding base
- Existing programs that are designed to be long term but are funded by soft money and would benefit from additional support and visibility
- New monitoring efforts, including enhancements to the Bight Program and other existing programs, that would require new funding.

The implementation plan detailed in the report on the Program provides detailed cost estimates for implementation over the five years between 2007 and 2011. Annual cost ranges from $1.2 million to $1.6 million. Of this, items totaling $8.7 million (over five years) is proposed for funding by the SMBRC. The total program costs (including esiting compliance monitoring) is about $20.2 million over five years.

The cost estimates are intended as an informed starting point for further planning, fund raising, and contracting. All core monitoring, planning, and assessment efforts were costed; but only a high-priority subset of the identified special studies are costed. Only costed components are listed as part of this public summary. For a full list of monitoring components included in the Comprehensive Monitoring Program, please see the full report.

This overall cost, and component cost estimates, are based on a number of assumptions intended to provide a common basis for comparing costs and alternative levels of effort. Nearly all program elements were converted to labor estimates, with the exception of those (e.g., Bight Program) that already have well-developed unit costs. Estimated labor hours were divided into three categories, with the following average hourly rates:

- Technician @ $50 / hr
- Research associate @ $80 / hr
- Principal investigator @ $140 / hr

These rates represent the approximate midrange of billing rates current in southern California across universities, government and nonprofit agencies, and consulting companies.

Total Estimated Program Costs

Program Total Cost (2007-2011)	20,222,945
Total SMBRC Items (2007-2011)	8,764,451

There are a variety of funding sources and models available to the *Program* and opportunities have expanded as a result of recent bond issues.

BACKGROUND

Early Work. In the early 1990s, the SMBRC spearheaded the development of the Santa Monica Bay Comprehensive Program in two phases:

Phase I – Involved the development of the Regional Monitoring Comprehensive Framework (SMBRP, 1993). Detailed sampling designs were developed for eight of 16 monitoring components identified in the framework.

Phase II – In-depth analysis of existing monitoring efforts in the Bay and Bay watershed (SMBRP, 2000). This analysis provided the basis for recommendations to eliminate some routine monitoring and reallocate savings in order to close critical monitoring gaps.

Progress to Date. As a result of these two reports, new and revised sampling designs (for bacteriology, seafood tissue, and kelpbed overflights) have been implemented through the NPDES[1] permit revisions, as well as other inter-agency agreements. In addition, independent but complementary monitoring efforts, such as the periodic Southern California bightwide regional monitoring surveys, have helped to address status and trends questions on the regional scale.

Prompted by new requirements adopted in the NPDES permit for the City of Los Angeles' Hyperion Waste Water Treatment Plant, a new process to accelerate the implementation of the Comprehensive Bay Monitoring Program was initiated in April 2005 and continued through September 2006. This process included a review of implementation efforts to date and development of preliminary monitoring objectives.

The *Comprehensive Monitoring Program for Santa Monica Bay* represents the completion of that effort.

PELAGIC ECOSYSTEM

Why monitor the pelagic ecosystem?

The pelagic ecosystem is important because it includes nutrients, phytoplankton, and zooplankton that are the base of the marine food chain, and thus of sport and commercial fisheries, which are important resources in their own right. The pelagic ecosystem also includes marine mammals and certain species of sea birds that are primarily dependent on the ocean for their food and habitat.

The pelagic zone is the part of the open sea or ocean comprising the water column, other than that near the coast or the sea floor. The pelagic ecosystem is largely dependent on the phytoplankton inhabiting the upper, sunlit regions, where most ocean organisms live. Biodiversity decreases sharply in the unlit zones where water pressure is high, temperatures are cold, and food sources scarce.[1]

Question: *Is the pelagic ecosystem in Santa Monica Bay healthy and protected from local anthropogenic disturbances that impact these resources?*

Pelagic Ecosystem Monitoring Objectives

- Determine the state of the overall California Current system with respect to large-scale oceanographic processes. (e.g., El Niño, Pacific Decadal Oscillation, upwelling)
- Determine if the state of the oceanographic system in Santa Monica Bay is synchronous with the overall California Current system.
- Measure changes in relative abundance and frequency of occurrence of key species (e.g., bottlenose dolphins, kelp bass)
- Measure the change in relative spatial distribution of key resource species over time
- Compare contaminant body burdens[2] in bottlenose dolphins in the Bay to accepted wildlife health thresholds
- Track changes in contaminant body burdens[6] in bottlenose dolphins in the Bay over time.
- Measure indicator values of general ecosystem health over time.
- Determine the relative magnitude and frequency of adverse events. (e.g., mammal strandings, harmful algal blooms)

[1] From the American Heritage Science Dictionary
[2] *Body burden* refers to the total amount of certain toxic chemicals present in an organism at a given point in time

Pelagic Ecosystem: **Costed Program Components with Total and Annual Average Estimated Costs***

	Total (2007 - 2011)	Annual Average
Add nutrients to POTW Central Bight Water Quality Program (revise grid)	144,960	28,992
Fish larvae, zooplankton biomass transects	456,150	91,230
Bottlenose dolphin & seabird surveys	1,370,000	274,000
Power plant impingement & entrainment	342,000	68,400
Power plant water quality grid	257,625	51,525
CLA,EMD—Inshore monitoring (indicator bacteria)—Annual	28,290	5,658
CLA,EMD—Offshore monitoring (indicator bacteria)—Quarterly	149,600	29,920
CLA,EMD—Offshore monitoring (CTD, etc)—Quarterly	193,845	38,769
LACSD WQ Grid	436,205	87,241
LACSD Inshore Bacteria	433,625	86,725
LACSD Offshore Bacteria	37,755	7,551
LACSD Bight Program	250,000	50,000
Develop pelagic habitat assessment strategy	17,600	3,520
Complete pelagic habitat assessment	32,000	6,400
Total	4,149,655	829,931

Shaded components already exist as part of ongoing monitoring programs.

***Pelagic Ecosystem*: Five-year Cost Estimates**

	2007	2008	2009	2010	2011	Five Year Total
Total	820,011	820,011	820,011	869,611	820,011	4,149,655
SMBRC	394,222	394,222	394,222	443,822	394,222	2,020,710

SOFT BOTTOM ECOSYSTEM

Why monitor the soft bottom ecosystem?

The soft bottom benthic ecosystem is important because it is the sink for a portion of the contaminants that enter the Bay through discharges, runoff, and aerial deposition. It is a key part of the food chain for demersal invertebrates and fish. Because sediment conditions change more slowly than pelagic conditions, the soft bottom is a useful means of identifying and tracking impacts of certain kinds of contaminants (e.g., lead, PCBs) on the Bay.

Soft bottom habitat comprised of unconsolidated, soft sediment (sand, silt, and clay), makes up most of the Bay's seafloor. This habitat supports a large number of organisms, including more than 100 species of demersal or bottom-dwelling fish, like White croaker, Queenfish, Surfperch, California halibut, and Barred sandbass.

Question: ***Are soft bottom marine benthic ecosystems in Santa Monica Bay healthy and protected from local anthropogenic disturbances?***

Soft Bottom Ecosystem Monitoring Objectives

- Determine levels throughout the Bay of toxicity and of contaminants in sediments.
- Track changes in sediment toxicity and contaminant levels over time.
- Determine the status of Bay infaunal and demersal fish/macroinvertebrate communities.
- Track changes in the status of infaunal and demersal fish/macrointertebrate communities over time.
- Determine levels of fish tissue contamination throughout the Bay.
- Track changes in levels of fish tissue contamination over time.
- Determine the proportion of the Bay exceeding accepted thresholds and benchmarks for toxicity, sediment contamination, community status, and fish tissue contamination, and the degree to which these proportions change over time.
- Estimate the potential magnitude of fishing impacts by tracking the location and intensity of commercial fishing with bottom gear.
- Estimate changes in relative abundance of key commercial and recreational demersal fishes.

Soft-Bottom: **Costed Program Components with Total and Annual Average Estimated Costs***

	Total (2007 - 2011)	Annual Average
Participate in Bight '08 planning (incl. ASBS sites)	48,000	9,600
CLA,EMD participate in Bight '08 planning	256,850	51,370
Sample in coordination w/ Bight '08	150,000	30,000
Acquire data on bottom fishing	11,800	2,360
Power plant benthic infauna	680,170	136,034
Power plant benthic sediment chemistry	82,600	16,520
Power plant demersal fish & invertebrates	14,500	2,900
CLA,EMD benthic infauna	423,775	84,755
CLA,EMD benthic sediment chemistry	302,030	60,406
CLA,EMD—Local fish & invert survey (community analysis)--biannual	19,599	3,920
CLA,EMD—Local bioaccumulation survey (Hornyhead Turbot)—annual	101,625	20,325
CLA,EMD—Local seafood safety survey (sportfish)—odd number yrs	125,400	25,080
CLA,EMD—SMB biennial assessment report	165,000	33,000
LACSD benthic infauna	516,840	103,368
LACSD benthic sediment chemistry	304,120	60,824
LACSD demersal fish & invertebrates	318,465	63,693
LACSD fish tissue	336,150	67,230
LACSD Bight Program	570,000	114,000
Develop soft bottom habitat assessment strategy	17,600	3,520
Complete soft bottom habitat assessment	54,400	10,880
Total	4,498,924	899,785

Shaded components already exist as part of ongoing monitoring programs.

Soft-Bottom: **Five-year Cost Estimates**

	2007	2008	2009	2010	2011	Five Year Total
Total	911,118	957,785	887,118	855,785	887,118	4,498,924
SMBRC	26,360	176,360	2,360	74,360	2,360	281,800

HARD BOTTOM ECOSYSTEM

Why monitor the hard bottom ecosystem?

Although hard bottom habitat is scarce in the Bay, it supports significant economic and ecological resources within the bay. Human uses include commercial and recreational fishing, scuba diving, and tourism. The hard bottom ecosystem in Santa Monica Bay encompass several distinct habitat types, including nearshore rocky reefs (some with persistent kelp beds), man-made features (including breakwaters, jetties, and wastewater treatment outfall pipes), and deep-water plateau called Short Bank.

Question: *Are hard bottom benthic ecosystems in Santa Monica Bay protected and healthy?*

Monitoring Objectives

- Determine the status of algal, invertebrate, and fish communities throughout the Bay within shallow water (< 90 feet) high relief and low relief habitat types.
- Track changes over time in the status of algal, invertebrate, and fish communities. throughout the Bay within shallow water (< 90 feet) high relief and low relief habitat types.
- Conduct reconnaissance of conditions in deep-water (> 90 feet) habitat, including banks, canyons, and rocky outcrops along the shelf edge.
- Track changes over time at a set of fixed reefs in shallow water.
- Estimate changes in abundance of key commercial and recreational rocky subtidal fishes.
- Assess the effectiveness of the current ASBS and any future marine protected areas at protecting and/or restoring algal, invertebrate, and fish communities.

Hard-Bottom: Costed Program Components with Total and Annual Average Estimated Costs*

	Total (2007 - 2011)	Annual Average
Sample natural substrate random grid	295,400	59,080
Sample artifical substrate random grid	40,900	8,180
Santa Monica Baykeeper fixed sites	196,875	39,375
Reef Check fixed sites	67,250	13,450
VRG fixed sites (Palos Verdes & King Harbor)	133,600	26,720
Ocean Resource Enhancement Hatchery Program	562,200	112,440
Conduct reconniassance of deep reefs	109,700	21,940
Power plant CRKSC overflights	96,000	19,200
LACSD CRKSC overflights	210,000	42,000
Assess existing data	32,000	6,400
Participate in Bight '08 planning	48,000	9,600
Sample ASBS in coordination w/Bight '08	150,000	30,000
Develop hard bottom assessment strategy	17,600	3,520
Complete hard bottom habitat assessment	54,400	10,880
Total	2,013,925	402,785

Shaded components already exist as part of ongoing monitoring programs.

Hard-bottom: Five-year Cost Estimates

	2007	2008	2009	2010	2011	Five Year Total
Total	388,715	486,265	442,415	384,265	312,265	2,013,925
SMBRC	327,515	425,065	381,215	323,065	251,065	1,707,925

ROCKY AND SANDY INTERTIDAL

Why monitor rocky and sandy intertidal habitats?

The rocky and sandy intertidal areas are an important interface between the sea and the land, providing habitat for numerous and diverse species in the Bay. These habitats also provide substantial recreational and economic opportunities.

Question: *Are the rocky and sandy intertidal ecosystems in Santa Monica Bay protected and healthy?*

Rocky and Sandy Intertidal Monitoring Objectives

- Determine the status of the rocky intertidal algal and invertebrate communities throughout the Bay.
- Track changes over time in the status of the algal and invertebrate rocky intertidal communities throughout the Bay.
- Determine location, frequency, and relative intensity of grunion spawning runs on sandy beaches throughout the Bay.
- Track changes in the location, frequency, and relative intensity of grunion spawning runs on sandy beaches.
- Measure species composition and relative abundance of surf-zone fishes at sandy beaches.
- Track changes in the species composition and relative abundance of surf-zone fishes at sandy beaches throughout the Bay.
- Measure the presence, location, and timing of occurrence of key bird species on sandy beaches throughout the Bay.
- Track changes in the presence, location, and timing of occurrence on key bird species on sandy beaches throughout the Bay.
- Determine the abundance and distribution of key plant species on sandy beaches throughout the Bay.
- Track changes in the abundance and distribution of key plant species on sandy beaches throughout the Bay.

Rocky and Sandy Intertidal: **Costed Program Components with Total and Annual Average Estimated Costs***

	Total (2007 - 2011)	Annual Average
MARINe rocky sampling	204,550	40,910
Sample expanded species list at MARINe sites	299,550	59,910
Sample 8 additional rocky stations	798,800	159,760
Sample surf zone fish sites	83,178	16,636
Sample grunion runs	192,538	38,508
Sample bird roosting sites	123,000	24,600
Sample bird estuary sites	197,750	39,550
Sample bird rare species sites	24,950	4,990
Sandy beach plant survey	63,700	12,740
CLA,EMD—Shoreline monitoring (indicator bacteria)—Daily	3,147,805	629,561
LACSD shoreline bacteria	391,110	78,222
Develop intertidal habitat assessment strategy	17,600	3,520
Complete intertidal habitat assessment	54,400	10,880
Total	5,598,931	1,119,786

****Shaded components already exist as part of ongoing monitoring programs.***

Rocky and Sandy Intertidal: **Five-year Cost Estimates**

	2007	2008	2009	2010	2011	Five Year Total
Total	1,105,386	1,105,386	1,105,386	1,177,386	1,105,386	5,598,931
SMBRC	397,603	397,603	397,603	469,603	397,603	2,060,016

WETLANDS

Why monitor wetlands?

Wetlands provide important ecological habitat for a wide variety of resident and migratory birds and for both juvenile and adult life stages of marine and estuarine fishes. Because of the vast majority of wetlands (estimate 95%) in southern California have been destroyed by urbanization, the wetlands that do remain have increased importance and are highly valued. The coastal wetlands habitat in Santa Monica Bay includes larger wetlands, such as the Ballona Creek Estuary and Malibu Lagoon, as well as smaller areas at the mouths of creeks in the northern portion of the Bay.

Question: ***Are the wetland ecosystems in Santa Monica Bay protected and healthy?***

Wetlands Monitoring Objectives

- **Determine the locations and sizes of wetlands and how they are distributed across the region by habitat type.**
- **Determine the condition of wetlands and associated resources on a regional scale.**
- **Track changes over time in the condition of wetlands and associated resources.**
- **Identify the major stressors on wetlands.**
- **Track changes in the nature and magnitude of stressors over time.**
- **Assess the effects of restoration and mitigation projects on the overall condition of wetlands and associated resources.**
- **Evaluate the effectiveness of individual restoration projects.**

Wetlands: **Costed Program Components with Total and Annual Average Estimated Costs***

	Total (2007 - 2011)	Annual Average
Select Bay sites 07 sampling	8,800	1,760
Sample core indicators in coordination w/ IWRAP	120,000	24,000
Sample tidal range, etc. in coordination w/ IWRAP	80,000	16,000
Finalize full indicator list	10,000	2,000
Participate in Bight '08 planning	17,600	3,520
Sample in coordination w/ Bight '08	200,000	40,000
Complete design in coordination w/ IWRAP	-	-
Monitor wetlands in coordination w/ IWRAP	-	-
CLA,EMD—Ballona Wetland (Benthic Macrofauna)—Annual	87,275	17,455
CLA,EMD—Ballona Wetland (Fish & Megainverts)—Annual	120,195	24,039
CLA,EMD—Ballona Wetland (Vegetation & Soil Chemistry)—Annual	60,775	12,155
CLA,EMD—Ballona Wetland (Birds)—Annual—(Contracted out)	-	-
CLA,EMD—Ballona Lagoon Monitoring—Annual	180,030	36,006
LACSD Bight Program (Various)	819,235	163,847
Develop wetlands habitat assessment strategy	17,600	3,520
Complete wetlands habitat assessment	54,400	10,880
Total	1,775,910	355,182

****Shaded components already exist as part of ongoing monitoring programs.***

Wetlands: **Five-year Cost Estimates**

	2007	2008	2009	2010	2011	Five Year Total
Total	481,102	462,302	253,502	325,502	253,502	1,775,910
SMBRC	227,600	208,800	0	72,000	0	508,400

IMPLEMENTATION

Implementing the Comprehensive Monitoring Program will require (1) development of an implementation schedule, (2) development of a management structure, (3) commitment of funding and resources.

How should the implementation schedule be determined?

The report includes an implementation schedule, detailing when and how often each program component should be implemented. The implementation for the wetlands monitoring components is provided below, as an example.

Example Implementation Schedule: Wetlands

Program component	03 07	06 07	09 07	12 07	03 08	06 08	09 08	12 08	03 09	06 09	09 09	12 09	03 10	06 10	09 10	12 10	03 11	06 11	09 11	12 11
Wetlands																				
IWRAP completes sampling frame																				
Select Bay sites 07 sampling																				
IWRAP core indicator sampling																				
Sample core indicators in coordination w/ IWRAP																				
Finalize full indicator list																				
Participate in Bight '08 planning																				
Bight '08 / IWRAP wetland sampling																				
Sample in coordination w/ Bight '08																				
Complete design in coordination w/IWRAP																				
Monitor wetlands in coordination w/IWRAP																				
POTW wetlands monitoring																				
Develop wetlands habitat assessment strategy																				
Conduct wetlands habitat assessment																				

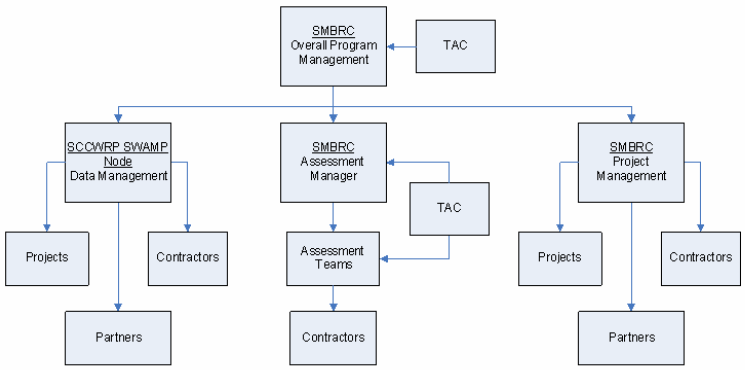
The implementation schedule proposed in the report reflects full implementation of the Comprehensive Monitoring Program. Given the reality of limited resources, prioritizing activities and developing an implementation schedule based on priorities may be required.

The following criteria were proposed to determine the order in which individual program components are implemented:

- Existing programs that require more secure funding
- Overall cost-benefit, (defined as a combination of cost and the degree to which a monitoring effort would fill a data gap that is either critical to a management decision or completes a program component and thus facilitates a more complete assessment)
- Opportunity for coordination with other program development efforts
- Management need, including the ability for a management response within the Bay
- Public / stakeholder interest.

While these priorities provide useful overall guidance, the existing schedules of other programs (e.g., Bight Program, IWRAP) to some extent constrain the Program's choices.

Proposed Management Structure



How should the Comprehensive Monitoring Program be managed?

The management structure recommended in the report is pictured in the diagram on the right. It allows the SMBRC to contract with consulting companies, universities, or nonprofit groups for individual aspects of the Program, while the SMBRC provides overall coordination and management oversight of all Program activities.

These tasks of coordinating data collection, data management, and assessment are complex, and must be sustained over the long term. Their scale substantially exceeds the SMBRC's previous undertakings. The workgroup recommended–at a minimum–the following roles:

Program manager:	Responsible for overall coordination and management of all program elements, for scheduling, costing,and contracting, and for establishing and maintaining collaborative relationships with other programs essential as partners and/or data sources for the Comprehensive Monitoring Program. (Full-time, SMBRC)
Data manager:	Responsible for establishing, implementing, and maintaining data acquisition, sharing, and QA/QC policies. Also responsible for developing an overall data management strategy as well as any needed databases and associated data management tools. (SCCWRP staff)
Assessment manager:	Responsible for designing data analysis approaches and broader integrative assessment strategies for each program component. Also responsible for overseeing design of the periodic State of the Bay report, including ecosystem assessment approaches that tie the various program components together. (Full-time, SMBRC)

How will the data be managed?

While acquired data and data products will not permanently reside in a centralized Program database, they must be efficiently organized and stored in a manner that supports the various assessment efforts. This will require the ability to store and index both digital and hard copy information, as well as contact information for the data sources and scientists associated with each type of data. Such information management systems have been developed elsewhere and the Program should investigate the applicability of other existing systems rather than developing an information management system de novo.

The report recommends that the Program incorporate its data in the SWAMP regional data center being established at SCCWRP. In preparation for this step, the Program should use SCCWRP's expertise to develop the database structures, data entry routines, QA/QC procedures, and query functions needed to reliably store and use the Program's data. In addition to these core database functions, SCCWRP should also provide the technical support needed to accomplish the other data management goals listed above (e.g., establish data management standards, define data transfer formats).

How will the data be assessed?

Three levels of assessment were recommended as essential to the Program's ability to (1) analyze and interpret monitoring results, (2) make data and data products available to its audiences, and (3) synthesize the results of the Program's many monitoring elements into a cohesive view of the Bay as a whole. These three levels of assessment are:

- Project level that annually summarizes basic findings for individual monitoring elements
- Habitat level, conducted every five years, that integrates and synthesizes data from all datatypes relevant to the five major habitats in the Bay (pelagic, hard bottom, soft bottom, intertidal, wetlands)
- Program level, including a summary biannual report and a more comprehensive assessment conducted every five years, that compiles findings from habitat assessments into a picture of the Bay as a whole.

The three assessment levels represent increasing levels of spatial scale and integration across datatypes.

Results of all assessments would contribute to periodic evaluations and adjustments of the Program's monitoring priorities and designs.

Costed Implementation Components with Total and Annual Average Estimated Costs

	Total (2007 - 2011)	Annual Average
Implement database	400,000	80,000
Maintain and update database	300,000	60,000
Program management	600,000	120,000
Assessment Manager	600,000	120,000
Develop biannual report strategy	17,600	3,520
Prepare biannual summary report	78,400	15,680
Develop Baywide assessment strategy	35,200	7,040
Prepare Baywide assessment	54,400	10,880
Hold State of the Bay conference	100,000	20,000
Total	2,185,600	437,120

How can the Comprehensive Monitoring Program be funded?

There are a range of potential funding sources for the Comprehensive Monitoring Program[3].

The table to the lower right summarizes potential sources of funding for the Program, at the federal, state, and local levels. By far the largest potential source of funding is the state bond initiatives, Propositions 12, 50, and 84. Federal funds are also available, to a significantly lesser degree, and are primarily dedicated to supporting existing SMBRC staff. While some of these funds may support staff who are involved in program management and assessment, they are not likely to be available for support of direct monitoring activities. Finally, local funds from NRG have the potential to act as start-up funds, while adjustments to existing compliance monitoring programs could provide additional long-term funds, depending on the nature of any such permit adjustments. While the two large POTWs discharging to the Bay already conduct a substantial amount of monitoring and special studies, other dischargers (e.g., industrial dischargers, MS4, or stormwater, programs) are much less involved in in-Bay monitoring and assessment.

Potential Sources of Funding

Source	Amount	Notes
Federal		
National Estuary Program	$500,000 / yr	Annual operating funds, primarily for existing staff, some of which could be spent to support monitoring
EPA PV Shelf Superfund Program / NOAA Montrose Settlement Restoration Program	$70 million	Remediation of Montrose Chemical damage on Palos Verdes shelf; some might be directed to monitoring.
State		
Proposition 12	$5 million remaining	Few restrictions on spending
Proposition 84	$18 million	Earmarked for Bay restoration projects. Restrictions not yet clear though it may be primarily restricted to capital projects
Ocean Protecion Council	$90 million	Allocated to Ocean Protection Trust Fund by Prop. 84 for development of scientific data needed for adaptive marine resource management
Legislature	Unknown	Possibility for direct appropriation
SWAMP	$11 million	Focused primarily on inland waters at present
Local		
NRG	$800,000	Paid to Commission as one-time lump sum as part of licensing condition
Permittees	Unknown	Potential monitoring offsets form adjustments to existing monitoring

[3]. Program elements with independent, long-term funding, such as compliance monitoring, the Bight Program, and the Department of Fish and Game's recreational catch monitoring, are not considered to be candidates for support from the Program's funding resources.

The report provided a number of other regional monitoring and assessment programs as examples of alternative funding approaches, including:

The Regional Monitoring Program for Toxic Substances in San Francisco Bay	Assesses each major permitted discharger into the Bay a fee based on their loadings to the Bay of key contaminants. These fees are combined and used to support the regional monitoring, data analysis, and reporting activities carried out by the San Francisco Estuary Institute.
The San Gabriel River Regional Monitoring Program	Has recently established a long-term funding base with a permanent compliance monitoring offset based on streamlining compliance monitoring. These funds are transferred to the Los Angeles and San Gabriel Rivers Watershed Council, which manages watershed monitoring and reporting activities.
The Southern California Bight Program	Funded with a combination of in-kind support and monetary contributions from participants, much of which is made available as the result of periodic compliance monitoring offsets.

However, the report does not make a recommendation on any specific funding mechanism.